Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An exposure apparatus for exposing a transfer pattern of a mask onto a photosensitive substrate in an overlapping manner, so as to expose a pattern larger than said transfer pattern of said mask onto said photosensitive substrate;

said exposure apparatus comprising:

a light source unit for supplying illumination light;

an illumination optical system for guiding said illumination light to said mask having said transfer pattern;

said illumination optical system comprising:

an illumination area defining unit, disposed at a position substantially optically conjugate with said mask, for defining a predetermined area corresponding to an illumination area to be formed on said mask; and

an imaging optical system, between the illumination area defining unit and the mask, for forming said illumination area on said mask by projecting said predetermined area defined by said illumination area defining unit onto said mask;

said exposure apparatus further comprising:

an adjusting unit for ~~adjusting an optical characteristic~~correcting at least one of aberrations of said imaging optical system so as to ~~adjust~~ improve an ~~optical~~exposure characteristic ~~in said illumination area formed on said mask or~~ in an overlapping exposure area formed on said photosensitive substrate.

2. (Original) An exposure apparatus according to claim 1, further comprising a projection optical system for projecting an image of said transfer pattern of said mask onto an exposure area on said photosensitive substrate.

3. (Original) An exposure apparatus according to claim 2, wherein said exposure apparatus satisfies an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 6$$

where NA1 is the maximum numerical aperture of said imaging optical system on said illumination area defining unit side, β is the absolute value of imaging magnification of said imaging optical system, and NA2 is the maximum numerical aperture of said projection optical system on said photosensitive substrate side.

4. (Original) An exposure apparatus according to claim 3, wherein said exposure apparatus satisfies an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 4 .$$

5. (Original) An exposure apparatus according to claim 1, wherein said illumination area defining unit causes said illumination area formed on said mask to become variable.

6. (Original) An exposure apparatus according to claim 1, wherein said adjusting unit adjusts at least one of imaging magnification, distortion, curvature of field, astigmatism, spherical aberration, coma, image surface tilting, decentering distortion, decentering coma, and decentering astigmatic difference in said imaging optical system.

7. (Original) An exposure apparatus according to claim 1, wherein said adjusting unit adjusts at least one of an illuminating angle with respect to a center of gravity of a luminous flux onto said mask or onto said photosensitive substrate, and unevenness of illumination on said mask or on said photosensitive substrate.

8. (Original) An exposure apparatus according to claim 1, wherein said adjusting unit carries out adjustment by at least one of moving at least one of said illumination area defining unit and at least a part of said imaging optical system along an optical axis, shifting at least one of said illumination area defining unit and at least a part of said imaging optical

system within a plane orthogonal to said optical axis, tilting at least one of said illumination area defining unit and at least a part of said imaging optical system with respect to said optical axis, and rotating at least one of said illumination area defining unit and at least a part of said imaging optical system about said optical axis.

9. (Original) An exposure apparatus according to claim 1, wherein said adjusting unit moves or tilts each of a first lens or first lens group for adjusting said optical characteristic, and a second lens or second lens group for correcting an optical characteristic deteriorated in accordance with the adjustment of said optical characteristic.

10. (Original) An exposure apparatus according to claim 1, further comprising a measuring unit for measuring an optical characteristic in said illumination area formed on said mask or in said exposure area formed on said photosensitive substrate so as to obtain an optical characteristic of said imaging optical system.

11. (Original) An exposure apparatus according to claim 1, wherein said adjusting unit adjusts at least one of imaging magnification, distortion, curvature of field, astigmatism, spherical aberration, coma, image surface tilting, decentering distortion, decentering coma, and decentering astigmatic difference in said imaging optical system by at least one of moving at least one lens constituting said imaging optical system along an optical axis, shifting said at least one lens along a plane orthogonal to said optical axis, tilting said at least one lens with respect to said optical axis, and rotating said at least one lens about said optical axis.

12. (Original) An exposure apparatus according to claim 1, further comprising a measuring unit for measuring said optical characteristic;

wherein said adjusting unit carries out said adjustment based on a result of measurement obtained by said measuring unit.

13. (Original) An exposure apparatus according to claim 1, further comprising a moving unit for moving at least one of said photosensitive substrate and said mask to a position where exposure partly overlaps an already exposed area so as to carry out said exposure in an overlapping manner.

14. (Original) An exposure apparatus for exposing a transfer pattern of a mask onto a photosensitive substrate;

said exposure apparatus comprising:

a light source unit for supplying illumination light;

an illumination optical system for guiding said illumination light supplied by said light source unit to said mask having said transfer pattern; and

a projection optical system for projecting an image of said transfer pattern of said mask onto an exposure area formed on said photosensitive substrate;

said illumination optical system comprising:

an illumination area defining unit, disposed at a position substantially optically conjugate with said mask, for defining a predetermined area corresponding to an illumination area to be formed on said mask, and an imaging optical system for forming said illumination area on said mask by projecting said predetermined area defined by said illumination area defining unit onto said mask;

said exposure apparatus further comprising:

an adjusting unit for adjusting an optical characteristic in said illumination area formed on said mask or in said exposure area formed on said photosensitive substrate;

said exposure apparatus satisfying an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 6$$

where NA1 is the maximum numerical aperture of said imaging optical system on said illumination area defining unit side, β is the absolute value of imaging magnification

of said imaging optical system, and NA2 is the maximum numerical aperture of said projection optical system on said photosensitive substrate side.

15. (Original) An exposure apparatus according to claim 14, wherein said exposure apparatus satisfies an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 4 .$$

16. (Original) An exposure apparatus according to claim 14, wherein said adjusting unit adjusts at least one of imaging magnification, distortion, curvature of field, astigmatism, spherical aberration, coma, image surface tilting, decentering distortion, decentering coma, and decentering astigmatic difference in said imaging optical system.

17. (Original) An exposure apparatus according to claim 14, wherein said adjusting unit adjusts at least one of an illuminating angle with respect to a center of gravity of a luminous flux onto said mask or onto said photosensitive substrate, and unevenness of illumination on said mask or on said photosensitive substrate.

18. (Original) An exposure apparatus according to claim 14, wherein said adjusting unit carries out adjustment by at least one of moving at least one of said illumination area defining unit and at least a part of said imaging optical system along an optical axis, shifting at least one of said illumination area defining unit and at least a part of said imaging optical system within a plane orthogonal to said optical axis, tilting at least one of said illumination area defining unit and at least a part of said imaging optical system with respect to said optical axis, and rotating at least one of said illumination area defining unit and at least a part of said imaging optical system about said optical axis.

19. (Original) An exposure apparatus according to claim 14, wherein said adjusting unit moves or tilts each of a first lens or first lens group for adjusting said optical characteristic, and a second lens or second lens group for correcting an optical characteristic deteriorated in accordance with the adjustment of said optical characteristic.

20. (Original) An exposure apparatus according to claim 14, further comprising a measuring unit for measuring an optical characteristic in said illumination area formed on said mask or in said exposure area formed on said photosensitive substrate so as to obtain an optical characteristic of said imaging optical system.

21. (Original) An exposure apparatus according to claim 14, wherein said adjusting unit adjusts at least one of imaging magnification, distortion, curvature of field, astigmatism, spherical aberration, coma, image surface tilting, decentering distortion, decentering coma, and decentering astigmatic difference in said imaging optical system by at least one of moving at least one lens constituting said imaging optical system along an optical axis, shifting said at least one lens along a plane orthogonal to said optical axis, tilting said at least one lens with respect to said optical axis, and rotating said at least one lens about said optical axis.

22. (Previously Amended) An exposure apparatus according to claim 14, further comprising a measuring unit for measuring said optical characteristic;

wherein said adjusting unit carries out said adjustment based on a result of measurement obtained by said measuring unit.

23. (Original) An exposure apparatus according to claim 14, further comprising a changing unit for changing at least one of size and form of said illumination light at a pupil of said illumination optical system.

24. (Original) An exposure apparatus according to claim 23, wherein said adjusting unit adjusts said optical characteristic changed by said changing unit.

25. (Original) An exposure apparatus according to claim 14, further comprising a scanning unit for moving said mask and said photosensitive substrate relative to said projection optical system along a predetermined scanning direction so as to expose an image of said transfer pattern of said mask onto said photosensitive substrate in a scanning manner;

said illumination optical system including:

an optical integrator, disposed between said changing unit and said illumination area defining unit, for illuminating said mask with illumination light by way of said changing unit;

said optical integrator being arranged such that a direction optically corresponding to a shorter side direction of a cross section of said optical integrator perpendicular to an optical axis or a shorter side direction of a cross section of a number of optical elements constituting said optical integrator perpendicular to said optical axis coincides with said scanning direction.

26. (Original) An exposure apparatus comprising:

an illumination optical system including an illumination area forming optical system for forming an illumination area on a mask having a predetermined pattern;

a projection optical system for projecting a pattern image of said mask onto a photosensitive substrate; and

an adjusting unit for adjusting said illumination optical system;

said exposure apparatus satisfying an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 6$$

where NA1 is the maximum numerical aperture of said illumination area forming optical system on a light source side, β is the imaging magnification of said illumination area forming optical system, and NA2 is the maximum numerical aperture of said projection optical system on said photosensitive substrate side.

27. (Original) An exposure apparatus according to claim 26, wherein said adjusting unit adjusts at least one of a number of optical members constituting said illumination area forming optical system.

28. (Original) A method of manufacturing a microdevice by using the exposure apparatus of claim 1;

said method comprising:

an illumination step of illuminating said mask by using said illumination optical system; and

an exposure step of exposing a transfer pattern formed in said mask onto said photosensitive substrate.

29. (Original) A method of manufacturing a microdevice by using the exposure apparatus of claim 14;

said method comprising:

an illumination step of illuminating said mask by using said illumination optical system; and

an exposure step of exposing a transfer pattern formed in said mask onto said photosensitive substrate.

30. (Currently Amended) A method of manufacturing a microdevice,

said method comprising:

an illumination step of illuminating a mask having a transfer pattern with illumination light; and

an exposure step of exposing said transfer pattern of said mask onto a photosensitive substrate in an overlapping manner;

said illumination step including:

an illumination area defining step of defining a predetermined area corresponding to an illumination area to be formed on a mask at a position substantially optically conjugate with said mask; and

an illumination area forming step of forming said illumination area on said mask by projecting said predetermined area onto said mask by using an imaging optical system that is located between the position where the predetermined area is defined and the mask;

said method further comprising:

an adjusting step of ~~adjusting an optical characteristic~~correcting at least one of aberrations of said imaging optical system prior to said exposure step so as to improve an exposure characteristic in an overlapping exposure area formed on said photosensitive substrate.

31. (Original) A method of manufacturing a microdevice according to claim 30, wherein said exposure step includes a projection step of projecting an image of said transfer pattern of said mask onto an exposure area on said photosensitive substrate by using a projection optical system.

32. (Original) A method of manufacturing a microdevice according to claim 31, said imaging optical system and said projection optical system satisfy an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 6$$

where NA1 is the maximum numerical aperture of said imaging optical system on a side opposite from said mask side, β is the absolute value of imaging magnification of said imaging optical system, and NA2 is the maximum numerical aperture of said projection optical system on said photosensitive substrate side.

33. (Original) A method of manufacturing a microdevice according to claim 32, said method satisfies an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 4.$$

34. (Original) A method of manufacturing a microdevice according to claim 30, wherein said illumination area defining step includes a changing step of changing said illumination area formed on said mask; and

wherein said adjusting step includes adjusting an optical characteristic of said imaging optical system according to a change in said illumination area caused by said changing step.

35. (Original) A method of manufacturing a microdevice according to claim 30, further comprising a measuring step of measuring an optical characteristic in said illumination area formed on said mask or in an exposure area formed on said photosensitive substrate;

wherein said adjusting step includes adjusting an optical characteristic of said imaging optical system according to a result of measurement obtained by said measuring step.

36. (Previously Amended) A method of manufacturing a microdevice;

said method comprising:

an illumination step of illuminating a mask having a transfer pattern with illumination light; and

an exposure step of exposing said transfer pattern of said mask onto a photosensitive substrate;

said exposure step including a projection step of projecting said transfer pattern of said mask onto said photosensitive substrate by using a projection optical system;

said illumination step including:

an illumination area defining step of defining a predetermined area corresponding to an illumination area to be formed on said mask at a position substantially optically conjugate with said mask; and

an illumination area forming step of forming said illumination area on said mask by projecting said predetermined area onto said mask by using an imaging optical system;

said method satisfying an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 6$$

where NA1 is the maximum numerical aperture of said imaging optical system on a side opposite from said mask side, β is the absolute value of imaging magnification of said imaging optical system, and NA2 is the maximum numerical aperture of said projection optical system on said photosensitive substrate side;

said method further comprising an adjusting step of adjusting an optical characteristic of said imaging optical system prior to said exposure step.

37. (Original) A method of manufacturing a microdevice according to claim 36, said method satisfies an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 4.$$

38. (Original) A method of manufacturing a microdevice according to claim 36, wherein said illumination area defining step includes a changing step of changing said illumination area formed on said mask; and

wherein said adjusting step includes adjusting an optical characteristic of said imaging optical system according to a change in said illumination area caused by said changing step.

39. (Original) A method of manufacturing a microdevice according to claim 36, further comprising a measuring step of measuring an optical characteristic in said illumination area formed on said mask or in an exposure area formed on said photosensitive substrate;

wherein said adjusting step includes adjusting an optical characteristic of said imaging optical system according to a result of measurement obtained by said measuring step.

40. (Original) A method of manufacturing a microdevice according to claim 36, wherein said illumination step includes a changing step of changing at least one of the size and form of illumination light at a pupil of an illumination optical system.

41. (Original) A method of manufacturing a microdevice according to claim 40, wherein said adjusting step includes a step of adjusting said optical characteristic changed by said changing step.

42. (Original) A method of manufacturing a microdevice according to claim 36, wherein said illumination step includes a uniform illumination step of uniformly illuminating said mask by way of an optical integrator; and

wherein said exposure step includes a scanning exposure step of exposing an image of said transfer pattern of said mask onto said photosensitive substrate in a scanning manner by moving said mask and said photosensitive substrate relative to said projection optical system along a predetermined direction optically corresponding to a shorter side direction of a cross section of said optical integrator perpendicular to an optical axis or a shorter side direction of a cross section of a number of optical elements constituting said optical integrator perpendicular to said optical axis.

43. (Previously Amended) A method of manufacturing a microdevice,

said method comprising:

illuminating a mask having a predetermined pattern by using an illumination optical system including an illumination area forming optical system for forming an illumination area on said mask;

exposing a photosensitive substrate by using a projection optical system for projecting a pattern image of said mask onto said photosensitive substrate; and

adjusting said illumination optical system;

said method satisfying an expression of:

$$0.01 < NA1/(NA2 \times \beta) < 6$$

where NA1 is the maximum numerical aperture of said illumination area forming optical system on a light source side, β is the imaging magnification of said illumination area forming optical system, and NA2 is the maximum numerical aperture of said projection optical system on said photosensitive substrate side.

44. (Original) A method of manufacturing a microdevice according to claim 43, further comprising a changing step of changing at least one of the size and form of illumination light at a pupil of said illumination optical system;

wherein said adjusting step adjusts said optical characteristic according to said changing step.

45. (Original) A method of manufacturing a microdevice according to claim 43, further comprising a changing step of changing said illumination area formed on said mask;

wherein said adjusting step adjusts said optical characteristic according to said changing step.

46. - 66. (Cancelled)

67. (New) An exposure apparatus for exposing a transfer pattern of a mask onto a photosensitive substrate in an overlapping manner, so as to expose a pattern larger than said transfer pattern of said mask onto said photosensitive substrate;

said exposure apparatus comprising:

a light source unit for supplying illumination light;

an illumination optical system for guiding said illumination light to said mask having said transfer pattern;

said illumination optical system comprising:

an illumination area defining unit, disposed at a position substantially optically conjugate with said mask, for defining a predetermined area corresponding to an illumination area to be formed on said mask; and

an imaging optical system, between the illumination area defining unit and the mask, for forming said illumination area on said mask by projecting said predetermined area defined by said illumination area defining unit onto said mask;

said exposure apparatus further comprising:

a first adjusting unit for adjusting at least one of an aberration of said imaging optical system so as to adjust an exposure characteristic in said illumination area formed on said mask or in an exposure area formed on said photosensitive substrate; and

a second adjusting unit for adjusting at least one of a deterioration in evenness of illumination distribution on said photosensitive substrate and a deterioration in telecentricity on said photosensitive substrate.

68. (New) A method of manufacturing a microdevice,

said method comprising:

an illumination step of illuminating a mask having a transfer pattern with illumination light; and

an exposure step of exposing said transfer pattern of said mask onto a photosensitive substrate in an overlapping manner;

said illumination step including:

an illumination area defining step of defining a predetermined area corresponding to an illumination area to be formed on a mask at a position substantially optically conjugate with said mask; and

an illumination area forming step of forming said illumination area on said mask by projecting said predetermined area onto said mask by using an imaging optical system that is located between the position where the predetermined area is defined and the mask;

said method further comprising:

a first adjusting step of adjusting at least one of an aberration of said imaging optical system prior to said exposure step; and

a second adjusting step of adjusting at least one of a deterioration in evenness of illumination distribution on said photosensitive substrate and a deterioration in telecentricity on said photosensitive substrate prior to said exposure step.

69. (New) A method according to claim 68, wherein said first adjusting step is performed prior to said second adjusting step.

70. (New) A method according to claim 69, wherein:

said second adjusting step comprises a first sub-step of adjusting the deterioration in evenness of illumination distribution on said photosensitive substrate and a second sub-step of adjusting the deterioration in telecentricity on said photosensitive substrate prior to said exposure step; and

said first sub-step is performed prior to said second sub-step.